Total No. of Questions – [08] Total No. of Printed Pages [02]

G.R. No.	

Paper code - U218-145 (BE-FS)

MAY 2019/ENDSEM

S. Y. B. TECH. (INFORMATION TECHNOLOGY) (SEMESTER - I)

COURSE NAME: DIGITAL ELECTRONICS AND LOGIC DESIGN

COURSE CODE: ITUA21175

(PATTERN 2017)

Time: [**2 Hours**] [Max. Marks: **50**]

(*) Instructions to candidates:

1) **Answer Q.1, Q.2, Q.3, Q.4, Q.5 OR Q.6, Q.7 OR Q.8**
2) **Figures to the right indicate full marks.**
3) **Use of scientific calculator is allowed**
4) **Use suitable data where ever required**

Q.1) a) Do the following conversions: [6 marks]

i) $(CD6)_{16}$ = (-----)$_{10}$

ii) $(1234)_{10}$ = (-----)$_{8}$

iii) $(25.675)_{8}$ = ( )$_{16}$

OR

b) Compare Sign Magnitude, 1's Compliment, and 2's Compliment signed number representations. Give example each and represent $(-9)_{10}$ using all these representations. [6 marks]

Q.2) a) Explain 3:8 Decoder IC 74138. Design (Truth Table, Logic Function, Circuit Diagram) Full Subtractor using IC 74138. [6 marks]

OR

b) List rules of BCD addition with example. Design (Truth Table, K-map, Logic Function, Circuit Diagram) BCD Adder using IC 7483. [6 marks]

Q.3) a) Draw & Explain 4 bit ring counter with state diagram. [6 marks]

OR

b) Draw and explain block schematic of IC 7490. Design & draw Mod-5 (0 to 5) truncated UP counter using IC 74191. [6 marks]

Q.4) a) Implement the following functions using PLA [4 marks]

$A(P, Q, R) = \sum m (0, 2, 4, 6)$

$B(P, Q, R) = \sum m (1, 3, 5, 7)$

OR

b) List, draw and explain ASM chart notations. [4 marks]

Q.5) a) Compare: [6 marks]

i) Variable and Signals in VHDL.

ii) Sequential and Concurrent VHDL statements.

b) Explain the structure of VHDL code with neat diagram. [4 marks]

c) Declare entity for Full adder and Half adder VHDL modules. [4 marks]

OR

Q.6) a) Declare entity and architecture for 3:8 Decoder VHDL module. [6 marks]

b) List any 4 operators used in VHDL code and explain each with example. [4 marks]

c) List the different VHDL program modeling styles and Explain any two of them. [4 marks]

Q.7) a) Explain 8086 programmer model with neat diagram. [6 marks]

b) Compare Microprocessor and Microcontroller with their applications. [4 marks]

c) Draw and explain the Harvard architecture. [4 marks]

OR

Q.8) a) Draw 8086 architecture and explain each functional block. [6 marks]

b) List applications of Microcontroller and explain any two. [4 marks]

c) List main features of 8086 Microprocessor. [4 marks]